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**University Examinations 2014/2015**

SECOND AND THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR DEGREE OF BACHELOR OFCOMPUTER SCIENCE, BACHELOR OF COMPUTER TECHNOLOGY AND BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

**CCS 3375: ARTIFICIAL INTELLIGENCE**

**DATE: OCTOBER 2015 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define the following terms as used in AI:
2. Rule.
3. Knowledge.
4. Intelligent agent.
5. Expert systems.
6. Artificial Intelligence (10 Marks)
7. Represent the following as a set of frames:

The aorta is a particular kind of artery, which has a diameter of 2.5 cm. An artery is a kind of blood vessel. An artery always has a muscular wall, and generally has a diameter of 0.4cm. A vein is a kind of blood vessel, but has a fibrous wall. Blood vessels all have tubular form and contain blood. (6 Marks)

1. Represent the following sentences into a semantic network:
2. Palco is a calico.
3. Herb is a tuna.
4. Charlie is a tuna.
5. All tunas are fishes.
6. All calicos are cats.
7. All cats like to eat all kinds of fishes. (6 Marks)
8. List three objectives of AI. (3 Marks)
9. Discuss five application of AI. (5 Marks)

**QUESTION TWO (20 MARKS)**

1. Discuss six branches of AI. (6 Marks)
2. Using a valid example, discuss the following heuristic search method
3. A\* search algorithm.
4. Greedy search. (6 Marks)
5. A machine is considered to be intelligent, by use of TURING TEST discuss with an aid of diagram the turing test process (Acting Humanly) in relation to artificial intelligence. (6 Marks)
6. List four types of agent. (2 Marks)

**QUESTION THREE (20 MARKS)**

1. Define the term search problem. (2 Marks)
2. Discuss four ways on how you can evaluate a search. (4 Marks)
3. Define the following terms as used in AI search problem:
4. State space
5. Start node
6. Path cost
7. Goal condition (4 Marks)
8. Discuss the following uninformed search methods (Blind):
9. Depth-first search
10. Breadth-first search.
11. Iteractive deepening search.
12. Bi-directional search. (6 Marks)
13. Discuss the problem solving technique in AI. (4 Marks)

**QUESTION FOUR (20 MARKS)**

1. With an aid of diagram, discuss the component of expert system. (8 Marks)
2. Discuss what a mobile agent is. (4 Marks)
3. Describe how you can design an agent that can wipe the windscreens of car when needed. (4 Marks)
4. List and explain how an agent different from other software. (4 Marks)

**QUESTION FIVE (20 MARKS)**

1. Discuss the following Heuristic search method:
2. Hill climbing techniques.
3. Heuristic function. (4 Mark
4. List three problems of Hill climbing techniques. (3 Marks)
5. Discuss AI in relation to E-commerce. (3 Marks)
6. Define Business Intelligence and discuss the five key stages of Business Intelligence. (5 Marks)
7. Briefly discuss the history of AI. (5 Marks)